The Organic Farmer

The magazine for sustainable agriculture in East Africa

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Nr. 85 June, 2012

Growing crops require nutrients

Due to loss of fertility as a result of heavy rains, farmers need to supplement their crops with nutrients.

The Organic Farmer

TOF - Most crops planted in April and May are currently in their initial stages of growth. The heavy rains have of course had an adverse effect on the crops because most of the nutrients have been washed down or leached if not washed away by the run-off water. This means that the biggest problems now facing the crops are deficiencies in major nutrients that the crops require to grow well. This is therefore the busiest time for the farmers. If one relaxes, it means all the work so far done on the crops will be in vain.

Farmers can easily increase their crops yields if they supplemented them with fertilizers. With the costs of chemical fertilizers going beyond the reach of many farmers, there are good sources of major nutrients available on the farm. Use of compost and slurry is one of them. A lot of farmyard manure is often wasted, yet it could be easily applied on crops directly as slurry. Alternatively it can be composted and used as fertilizer. Plant extracts can also be prepared and used to correct nutrient deficiencies. Strong and healthy plants are resistant to diseases and pests. Farmers who discover nutrient deficiencies, pests and diseases early and take action are assured of good harvest at the end of the season.

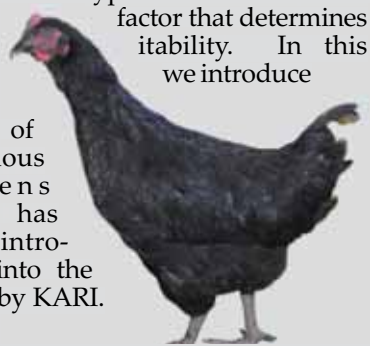
Page 4 and 8

Tithonia is rich in nitrogen, potassium, phosphorous and other minerals. (Photo: TOF)

New indigenous chicken breed

The cost of feeds is a major issue when it comes to the issue of chicken rearing. More and more farmers are going into poultry keeping as a business. But most exotic hybrid chickens are becoming uneconomical to keep because of the high cost of feeds. To go round this problem, most farmers are looking for ways to cut down their feed costs. Some of them are making their own feeds while many others are looking for new breeds that eat less feed and produce more eggs and quality meat. The choice of the type of breed to rear is a major factor that determines profitability. In this issues we introduce a new breed of indigenous chickens which has been introduced into the market by KARI.

Page 3



Farmers taken for a ride on fertilizer

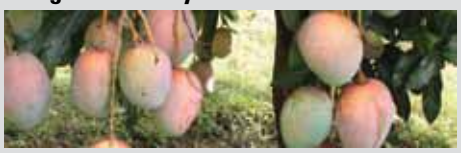
Like in the past two years, many small-scale farmers who expected to buy subsidised fertilizer from the National Cereals and Produce Board (NCPB) for planting this season have had to plant without fertilizer after they failed to get any after stocks reportedly ran out.

Corrupt Ministry of Agriculture officials at many district offices have been accused of selling the fertilizer to large-scale farmers and stockists who would buy the input at the subsidised price of Ksh 2500 repackage and then sell it in their outlets at between Ksh 3850 and Ksh 4000.

As farmers were being turned away as they sought to buy the fertilizer, workers at NCPB depots could be seen loading the commodity into trucks to unknown destinations.

The PS Ministry of Agriculture Dr Romano Kiome assured the country that there were adequate stocks at NCPB depots for sale to farmers.

in this issue



Dear farmers,

From our analysis of your questions, a common trend dominates all of them: Most farmers ask questions related to livestock production, mainly on dairy cows, goats, chickens etc. This is a clear indication of the importance of animal production.

We easily understand the farmers. All animal products such as milk or eggs fetch more or less good prices all the year round. The farmer can decide when to sell a cow or goat, chickens or eggs. And when they do so, the revenue is instant. For example, in January many farmers sell their animals to raise school fees for their children. In livestock production, the farmer is much more autonomous, and income from the venture is better assured.

However, all of us are fully aware that food crop production is also very important for the country's food security; without food crops, we face the danger of shortages and starvation. But food crop production is a source of great frustration for our farmers. At planting time, they face the problem of inputs such as seeds fertilizers and costly land preparation. When the rains are good and farmers get get a good harvest, they face another problem: Due to low demand, prices tend to drop after harvest, making it very difficult for farmers to recover their production costs; transport expenses are high and exploitation by middlemen is rampant.

All these problems should not demotivate farmers. What they need to do is to plan well. First, the choice of crops to be grown is very important. Secondly, they need to do proper timing of their production period; this ensures that they do not grow the same crops at the same time, which leads to overproduction and market glut (flooding of markets). Additionally, farmers should try to diversify the range of crops they produce. On another note, adding value to the various farm products also improves market prices. And if farmers sell their farm produce in groups, they can benefit more. Key to this is group harmony.

It is worth exploring new ways of doing things. Farming needs not be a loss-making venture all the time.

TOF P.O. Box 14352, Nairobi 00800, Tel: 020 251 92 33, 0717 551 129, 0738 390 715, Email: info@organickenya.org

The economics of mango production

A mango tree has high potential for poverty reduction in arid and semi-arid areas.

Josephat Mulindo*

A clean mango orchard: Sanitation is a very important aspect of management because it reduces incidence of pests and diseases. Tommy mango variety (right). (Photo IN)

The mango is known as the "king fruit" and for a good reason. It has unrivalled nutritive value and offers an opportunity for household wealth creation. Just like other perennial crops, mango production requires a growing period of at least three years before first fruiting. However, five to six months after transplanting, the plant sprouts first flowers that should be removed since the crop is still too young and weak to support the fruits.

Let us now turn to inputs and outputs of mango production.

Transplanting and Establishment

Ploughing and harrowing of land should be the starting point at a cost of Ksh 9,500 per ha. Clean planting material should be obtained from a registered nursery, because the future performance of mango trees will depend on the quality of seedlings planted. The improved cultivars available for warm marginal areas include Apple, Kent, Vandyke, Tommy Atkinson and Haden among others. Buy certified mango seedlings from certfied nurseries in your area. One hectare of land will accommodate 120 mango trees planted at a spacing of 9M × 9M. Therefore, to plant one hectare of mangoes you will require Ksh 13,200 to purchase the seedlings and Ksh 7,200 for the labour to excavate the hills (planting holes) and Ksh 1,500 for transplanting. The planting hole should be 60 x 60 cm and 100 cm deep (in dry areas: 90 x 90 cm and 100 cm deep). For organic production, mix a minimum of two debes of good compost and a handful of mijingu rock phosphate with the dug out soil. This will cost Ksh 1,880. Weeding in the first year should be done 6 times at a total cost of Ksh 24,600. This will be repeated in the second year at the same cost of Ksh 24,600. Therefore, the total cost in the first and second years will be Kshs 82,480.

Early production period

Weeding in this period (year 3 to year 5) is done 4 times a year resulting in a total cost of Ksh 49,200 for the period. Spraying to control of fungal infections, insect pests and mites should be done at least three times during flowering and 4 times during fruit development. The cost for one spraying session for the 120 mango trees is Ksh 2,424, giving a total cost of Ksh 33,940 for the 14 sprays in the period. The total labour cost for spraying the 1 ha 14 times is Ksh 6,460. Therefore, the total cost of spraying in the early production period is Ksh 40,400.

Mango fruit production will start during this period. The first fruits will start in the 3rd and flow into the 4th year. Average fruit production per plant starts at 50 and reaches 200 in the 5th year. At the price of Ksh 15, this creates a return of Ksh 90,000 in year 4 and Ksh 360,000 in year 5. Harvesting labour is always provided by the trader and is not incurred by the farmer.

Full production period

The costs in this period (year 6 to year 30) are limited to spraying 7 times and weeding 4 times annually. This gives a nominal annual production cost of Ksh 36,598. The average production per tree will be 250 fruits in year 6 (Ksh 450,000), three hundred in year 7 (Ksh 540,000) and peak at 450 fruits from year 8 (Ksh 810,000) to year 30, the expected productive lifespan of the mango tree.

Conclusion: The first 3 years in mango production are characterized by negative cash flow and income, because you spend on inputs without an income. The break-even point comes in the 5th year but could come earlier if the mango orchard is intercropped with an annual crop like beans or maize.

Yields of 15 tons/ha per year can be achieved from the 7th year onwards, if proper husbandry is followed. The income may also be higher if investment in mango value-added products is done.

Net income and cumulative cash inflows for a mango mono-crop per hectare

Year	Income [1] (Revenue) Ksh	Cost (labour, inputs etc) Ksh	Net income (Income-Cost) Ksh	Cumulative income Ksh
1	0	57,880	-57,880	-57,880
2	0	24,600	-24,600	-82,480
3	0	25,056	-25,056	-107,536
4	90,000	27,942	62,058	-45,478
5	360,000	36,598	323,402	277,924
6	450,000	36,598	413,402	691,326
7	540,000	36,598	503,402	1,194,728
8	810,000	36,598	773,402	1,968,130

[1] The price of one mango fruit is assumed to be Ksh 15 all through, and the figures indicated are not discounted but are the lowest values.

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An improved indigenous chicken breed

The new breed produces more eggs and meat and can do wellunder free-range conditions.

The Organic Farmer

The increase in demand for chickens and eggs, especially in Kenya's urban areas, has created a multi-million poultry industry in the country. More and more farmers rear chickens as a business. To improve the quality of chickens available to them, private companies and government research institutions are working hard to improve the quality of chicken breeds.

1.5 kg in 5 months

The latest institution to present a new indigenous chicken breed is KARI, Naivasha. Ten years ago, the KARI centre started a selective breeding programme. Thhe centre wanted to come up with a hybrid indigenous chicken that would not only adapt well to local climatic conditions and management systems, but also produce more eggs and meat compared to local indigenous breeds.

If kept in good condition, research shows that a hen from this breed can produce between 220- 280 eggs a year, depending on management. With good quality feeding (6.20 kg of feed given in 5 months), and careful chicken husbandry a hen can attain 1.5 kg in weight in 5 months. A cock (having consumed 6.8 kg of feed) weighs up to 2.10 kg over the same period. To maintain optimum egg production, a hen from the breed requires 122 g of feed per day.

A chicken for all seasons

But it is its ability to survive in a harsh environment that makes the new chicken breed more appealing to farmers, especially those in arid and semi arid areas where most chicken breeds have low survival rates. A senior researcher at KARI, Dr. Ann Wachira confirms that farmers who have bought the breed in Mwingi and Kitui, have recorded good egg and meat production – despite the harsh climatic conditions.

Unlike other chicken breeds, it is easy to show the difference between a cock speckled (right) and a hen black (below). This is evident from when they are a day old.

"The birds can do well under free range and organic farming management systems, where the farmer does not need to buy supplementary feeds to maintain them," adds Wachira.

The birds seem to do better when vaccinated against common chicken diseases such as New Castle disease and gumboro, although farmers have to know chickens diseases common in their regions before engaging a vaccination programme. The breed has a quiet temperament, excellent feathering and is able to adapt to the conditions in which it is reared faster than other birds.

Incubator for 35'000 eggs

Unlike other chicken breeds in the market where it is difficult to differenciate the hens and cockerels in this breed, the two have distinct colours: The hens are black in colour, while the cockerels are speckled. Farmers rearing this breed can therefore be able to distinguish the sex of the bird from day old chicks. The centre has recently acquired an incubator with a capacity of 35,000 eggs, meaning that they will be able to meet the demand from poultry farmers across the country.

A day-old chick goes for Ksh 80, four-week old chicks at Ksh 180. Breeding cocks Ksh 800 each and fertile eggs Ksh 600 for a tray of 30 eggs. Farmers interested in the new breed can place their orders to be included in the waiting list.

Contact KARI Naivasha P.O. Box 25, 20117 Naivasha, or Tel: 050 50 483, 0711 277 015

Housing is a problem

Proper housing for chickens is still a challenge to many poultry farmers especially those rearing indigenous chicken. Correct housing is very important for successful poultry production. It is generally assumed that indigenous chicken are hardy and resistant to diseases and therefore do not require a lot of care. But this is not the case; all chicken need good care in order to grow well and be productive. They should be provided with spacious and comfortable housing that allows them room to move freely and practise their normal behaviour.

Provide enough space

Congested rooms are responsible for restlessness and stress which cause pecking and cannibalism among flocks. Every adult chicken requires 2 square feet of space for movement. Apart from the housing space, chickens also require a run where they can move freely at day time, bask in sun, bath in the soil and rest. A chicken house should be constructed facing East to West as one-way of reducing draft (or wind) in the house. The house should have adequate lighting.

Laying nests should also have enough light, with one side made darker for hens to hide their backsides to prevent exposure and pricking of their oviducts by other chickens while laying eggs. A chicken house should be able to protect the chickens from predators such as dogs, wild cats and mongooses. The floor should be regularly cleaned and wood chippings spread on them to keep the house dry and comfortable; do not use saw dust because chicks and even adult chickens end up eating it.

Willy Kirwa's dairy farming experiment

Feeding dairy animals exclusively on dry matter ensures they take lots of water, which increases milk production.

By Wesley Ng'eno

"Show me a business that gives you your daily revenue by 6 a.m and I'll show you the milk business," says Willy Kirwa, at his farm in Kapseret, Eldoret. Kirwa who is hardly 40 years old has done an amazing job on this 4-year old dairy farm. A visit to the farm is as eye opening as it is inspiring.

Like many struggling 'want to be' dairy farmers, he started out with an original stock of about 8 cows that used to graze on free range. During a visit to a dairy farmer in Machakos, he was surprised to learn that one cow produced 35 litres of milk, while he collected a paltry 30 litres from his 8 cows. He was convinced that zero grazing is the way to go. He also decided to feed his livestock exclusively on dry matter. After 2 months, milk production doubled to 70 litres from the same cows.

Today, Kirwa milks 18 cows giving a combined 380 litres per day. The farm is managed by Willy and his wife, a farm manager and two farm workers. Kirwa attributes his rapid growth to three major areas dairy farming; feeding, management and breeding.

Animals require adequate space

The management of dairy cows as described in this article is of a high standard. This has enabled William Kirwa to get high yields from his dairy cows. From the pictures, one can tell that the cows sheds are very clean, he has kept his animals much better than most small-scale dairy farmers in the country. But from the animal welfare point of view, zero-grazing of dairy animals sometimes denies them the right to free movement. Animals require adequate space in order to allow them space to move freely and express their normal behaviour; zero grazing restricts the animals to very limited space, which is not the ideal environment for an animal. The animals require some extra space for rest and play, which helps reduce stress and discomfort. ***TOF***

Making dairy meal

To cut down on feed costs, Kirwa makes his own dairy meal. Each 70kg bag of dairy meal saves the farm up to Ksh 800. A bag of dairy meal is made from these ingredients;

5 kg cotton seed cake
5 kg wheat pollard
10 kg maize flour
15 kg rice germ
18 kg wheat bran
15 kg maize bran
1kg High phosphorous lick
1kg lime

The cost of this home-made dairy meal is Ksh 1500 per bag. A dairy cow is fed on 2 kg dairy meal for up to 15 litres of milk produced in a day. Cows yielding over 15 kg get between 3-4 kg per day. Lucerne can substitute cotton seed cake. Kirwa says he prefers lucerne because the other substitute, Soya, is too expensive. On the other hand, sunflower fattens the animals and inhibits milk production. Sunflower is ideal for beef animals.

Dry matter feeding

The cows are exclusively fed on dry matter mixture consisting of;

2 bags Boma Rhodes
1 bag wheat straw
1 bag maize stalks
I bag rice husks-In the absence of this, half a bag of maize stalk and half of wheat straw is used.

This mixture is thoroughly mixed with molasses (2 litres of molasses + 15 litres of lukewarm water) and compacted in plastic drums. The drums are then sealed using transparent polythene and left in the sun for three days. Through anaerobic fermentation, the feeds become tasty and soft. Each mature cow consumes 35 kg of this mixture daily. A cow fed on this, will consume 60 litres of water in a day. The water is provided at body temperature.

Kirwa says that urea can be used in the farmentation process but with a lot of caution, as it can be highly toxic if used above the recommended quantity. It is advisable that the choppings are medium size so as to allow for chewing rather than swallowing. This is necessary for the development of the rumen. DO not use metal drums for fermentation because of rust.

Solid salt lick is also provided and a cow is estimated to consume between 130-150 g per day. Calves and young heifers are also given the same feed. Calves are only allowed to suckle from their mothers for two days after which they are introduced to an artificial udder or bucket feeder.

Feed storage

Kirwa advises serious dairy farmers to store fodder that can sustain animals for one year in case of drought. The formula of (40 kgs x 365 days x number of animals) can be used.

He is of the opinion that zero grazing improves milk production. A cow on free range grazing spends energy and time looking for feed. The animal gets tired and may not get enough of the feed. When the feed is provided for in a zero grazing unit, the animal saves the energy and uses it for the more serious task of producing milk.

Wesley Ng'eno is the proprietor of Lelgut Dairy farm amd a memner of the Facebook group known as Farming Kenya.

Give additional nutrients to growing plants

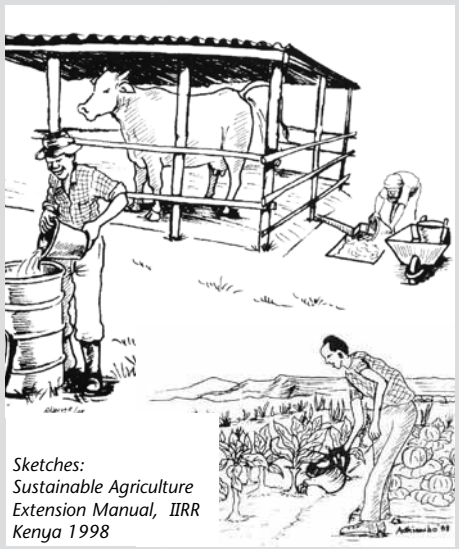
Clever farmers who spare no labour can boost their growing plants with liquid manure and foliar feed.

The Organic Farmer

Growing plants need a lot of nutrients. Even though the farmer may have prepared the soil very well and enriched it with manure and compost before planting, it is useful to supplement with cereals, but also vegetables (especially tomatoes) with supplementary nutrients in order to improve plant health and boost yields. The addition of fertilizers on top of the soil next to the plant during the growing season is called top dressing.

Top dressing has many benefits.
According to scientific studies, the increased yield in top dressed plots compared to the ones without is about 7 to 10 percent. The fertilizer seeps into the soil slowly with watering and rain feeding over a longer period of time; the nutrients are then taken up by the roots. The plants may also be sprayed with solutions of fertilizers, and the nutrients penetrate the plants through the leaves and stems; this process is called foliar feeding (*see article below*).

The effectiveness of topdressing depends on the weather and on the properties of the fertilizers— their solubility and the extent to which they migrate in the soil. Organic farmers who avoid chemical fertilizers (or do not have the money to buy them) can use farm resources: Good quality organic material such as compost and manure. Instead of it being in bulky heavy form, compost and manure can be formulated into liquid form with higher nutrient contents. This reduces the quantity required per unit area of land, makes handling and application easier and improves the chances of absorption of nutrients through the roots. By adding these nutriens in the liquid form, a farmer does not risk disturbing the roots of the plants by digging the fertilizer. It needs some labour to prepare liquid manure, but the hard work is compensated by a good yield.



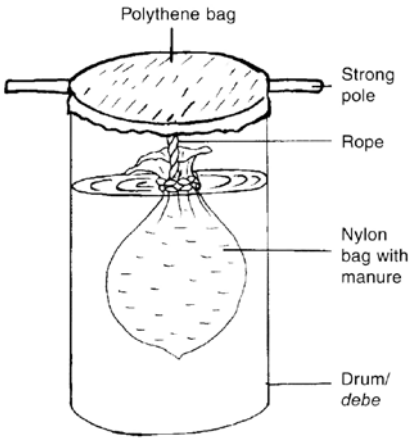
Sketches: Sustainable Agriculture Extension Manual, IIRR Kenya 1998

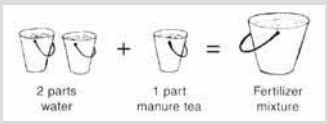
Slurry as fertilizer

Slurry, a liquid mixture of animal manure and urine from a livestock shed is very good organic fertilizer for leafy vegetables and other crops, as it is rich in nitrogen and organic matter. Especially for farmers practising zero grazing it is easy to collect manure and slurry, if they have made a slurry pit. Cover the pit and the storage drum, otherwise the nitrogen in the slurry will escape into the air. After two weeks, dilute the slurry with the same amount of water and pour the mixture around the plant, every two weeks durig the growing period. Do not use fresh urine or spray the slurry on the plants themselves, as it may scorch the leaves.

Manure tea

Similar to slurry, manure tea is a easy to make and is avery effective natural fertilizer; more over, it provides a chance to water the crops, especially in dry weather conditions. It promotes vegetative growth and fruiting by providing nitrogen to the crops (nitrogen deficiency can be discovered when plants are stunting or the leaves are yellowish). Manure tea is used with good results on vegetables as well as on maize and other grain crops.





- Fill the drum to a level of three-quarters water; place the manure in the sack, 50 kg for each drum, tie it and suspend it into the water.
- Cover the drum to prevent nitrogen from escaping; stir the mixture every 3 to 5 days.
- When the water becomes darkish (after 2 – 3 weeks), dilute it: one part manure tea, two parts water.

Plant leaves can absorb nutrients

Foliar feeding is a method of fertilizing through a plant's leaves. Frankly speaking, it is a controversial means of enhancing crop nutrition. The opinions, on whether foliar feeding is useful or not, vary in both conventional and organic agriculture circles. Relying on the experience of many international organic farming institutions, we consider foliar feeding as a reliable method to apply supplemental doses of minor and major nutrients to the plant. The method also increases resistance to insects and diseases. There is general consensus, however, that foliar fertilization should not be considered a substitute for a sound soil-fertility program.

Absorption through stomata

The absorption of essential elements through the leaves of the plants takes place through the stomata. These are the openings on a plant's leaves and stems that are similar to pores on our bodies. With foliar applications, nutrients are absorbed rapidly, usually within 6 to 24 hours. Foliar feeding can be done during early growth of the plant or after blooming, when is plant is under growing stress. The liquid can be applied as often as every three or four days.

It is advisable to test spray a plant to check for its response before doing a widespread application. Foliar feeding should be applied with a sprayer that can produce a mist for best results. The smaller the droplet size, the better the nutrients will absorb. Spray all surfaces of the leaves and stems. The best time to foliar feed is when the stomata are wide open, which is in the early morning or evening. Absorption is further enhanced when weather conditions are humid and moist.

Foliar feeds

Apart from fish-based fertilizers and seaweed (available in agrovet shops), there are some plants that can be used in organic farming for foliar feed making.

Comfrey: Plant tea made with comfrey leaves is high in minerals such as potassium, calcium, magnesium, iron and phosphorus along with several vitamins. The leaves contain a lot of protein. Comfrey is an excellent fertilizer for

continued: page 6

Exchange visit opens farmer's eyes

Alfred Amusibwa, Malava

The Kimilili information centre i-TOF recently organized an educational tour for farmers from the Nabikoto Agricultural Development Improvement Centre. They visited their counterparts at the Joy Women Group, Mlachake Women Group and Kalikhunyola Group in Malava, Kakamega County. The visit turned out to be very useful to the Nabikoto group's members. They had a lot to learn from their hosts, whom they heard had made great strides in the pursuit of cost-effective agricultural practices. The hosts had a demo plot for training members as well as visitors, they work as a team to cut expenses, and help each other with both agricultural and non-agricultural activities.

Lively discussions

The demo plot impressed the visitors alot. They practically learnt the best practices available to them locally, issues pertaining to livestock farming (i.e. poultry, dairy cattle, dairy goat), maintenance of soil fertility, and use of organic fertilizers. They passionately discussed many ideas, with the farmers agreeing to give these issues deeper attention as a way of improving food security on their farms.

Access to credits

The issue of access to micro-credit facilities took centre-stage, since the high interest rates levied by banks lock out many farmers. The visitors learnt of simple credit schemes, which can be set up by farmers themselves by pooling their resources. These included table and village banking, which can easily enable farmers to get loans without the pressures associated with high interest rates from lending institutions.

A discussion on healthy living also aroused interest amongst the visitors in view of the rising cases of lifestyle diseases mainly due to poor diet. The visitors learnt that planting and consuming energy giving foods like cassava, sweet potatoes, yams, sorghum and millet guard against diseases like cancer, heart complications and other chronic disorders that are on the rise. The farmers realized too that embracing medicinal plants that are locally available would not only act as a health insurance cover, but also boost their financial well-being. Plants like mondia, artemisia, moringa and others can help them improve human health.

Benefits of working together

The visitors learnt that farmers groups can only succeed though teamwork. Each group member must contribute to the work of the group; otherwise the group may collapse. The visit ended successfully; the visitors learnt that sharing experiences is a surest way of gaining knowledge. One Nabikoto member said to the hosts: "You have opened my eyes." Guests and hosts agreed to undertake more exchange visits in the future, consult each other as well as strive to attain the common goals.

> > > *from page 5:* Nutrients for growing plants

Comfrey

many plants, especially for tomatoes, pepper, cucumber and potato plants.

- Dip 3 kg of comfrey leaves in 45 litres of water.
- Cover with a lid and let stand.
- Use it undiluted after 4 weeks.

Tithonia: This plant with its yellow flowers contains nitrogen, phosphorus, potassium, calcium and magnesium and works wonder in crop growth. It can be used as a high value tea fertilizer for top-dressing and foliar feed. crops.

- Chop tithonia leaves, stems and flowers and add water at a ratio of 1 part in four parts of water.
- Let it stand in a tightly covered container for at least 7 days.
- Use it within 5 days, diluting it with equal amounts of water

Nettles: Liquid feed with nettles is a little low on phosphate, but supplies magnesium, sulphur, and iron.

- Put 1 kg (especially young) leaves in 10 litres of water.
- Cover with a lid and let it stand.
- Use after two weeks, diluted 1 part nettle liquid in 10 parts water.

Answers in brief

Sheep

What is the gestation period of a sheep?

The duration of pregnancy (gestation period) for ewes (female sheep) is 148 days.

Liquid fertilizer

- How do we apply the liquid fertilizers? (*answer see page 4*)
- At what time of the day should we apply the liquid fertilizers? (*see page 4*)
- How much time should pass between two applications of liquid fertilizer?

Liquid fertilizers are usually weak fertilizers; you may apply them every one to two weeks.

- At what stage should liquid fertilizers be applied and how take for example maize?

Liquid fertilizers can be applied at any stage of plant growth. They are very good at providing small amounts of nutrients that can be taken up immediately.

Seedlings

Why do some people water their seedlings first before uprooting?

Wetting loosens the soil around roots of the seedlings, it is then easier to pull the seedlings out of the soil without destroying the roots.

Diatomite for chicken

Can diatomite be mixed with the birds' food to cater for the internal parasites?

It is not at all clear whether diatomite can help against internal parasites. It however contains calcium, magnesium and other trace elements that may be useful to animals.

Be careful with tephrosia

What happens if by mistake the tephrosia solution happens to spill in my face and mouth?

Don't swallow it and wash it away with plenty of clean water. When using tephrosia, try to keep the extract away from your skin and use gloves if available. Wash hands with soap as soon as you have finished applying it on crops or animals.

Black plastic

Why do most farmers use a black tube for potting soil and not other types of materials of any other color?

Black plastic absorbs the heat from the sun, the bags the get warm; this stimulates the germination of the planted seeds.

Sprayig animals

How many times should I spray the solution of plant extracts to my animals?

At the beginning of the treatment, every second day; when you discover, that the parasites have gone, you can spray every week.

Green manures work efficiently

Can one rely only on green manures and harvest abundantly?

The benefit of green manures is that they not only provide nutrients for the plants, but also organic matter for the soil. This feeds the soil organisms and helps them to do their useful work for your plants. Through the addition of humus they also facilitate the uptake of nutrients for the plants, fight soil acidification and increase the amount of water that can be stored in the soil. If green manure plants are used as mulch, they cover the soil and protect it from erosion and drying out too fast.

Leguminous green manures are an efficient source of nitrogen on your farm. All green manures are worked into the soil superficially a few weeks before planting to give them time to decay and release their nutrients. For even better results, use animal manures in addition. Yes, it is possible to rely on green manures, but a careful management is necessary.

Always be aware that all plant nutrients and organic material (in the form of weeds or harvesting) that are removed from the shamba and not recycled and brought back as mulch, compost or animal manures will be lost, affecting the nutrition of your future crops. ***tsz***

Green manure like lablab (right) or desmodium (left) add nitrogen to the soil.

Wait after spraying

When should we start using vegetables after spraying has taken place?

After spraying plant extracts, wait at least one week. When using chemicals, you will find the waiting period on the package. When spraying animal manure teas, be very careful not to spill them over plant parts that will be eaten, they might contain pathogens that can be infectious for several months (e.g. E.coli).

Weeding makes sense

Does weeding contribute to soil fertility?

Weeding makes sure that your crops get the soil nutrients, not the weeds. If you uproot the weeds leaving them on the ground as mulch, this will protect the soil from erosion, and provide nutrients to the crop when the weeds decay. Removing the weeds removes nutrients from the field!

Arrange eggs correctly

What should be the arrangement of eggs in an egg tray and why?

When arranging eggs in a tray, make sure that the narrow sides face down and the broader sides face up. The broader part is the side from which the egg breathes. Generally, always handle all eggs with much care.

Plant extracts

Pests seem to be resistant to chemical pesticides when used for a long time; what about the plant extracts, can pests resist them also?

Resistance against plant extracts is unusual because their chemical composition is more complex. The main problem with plant extracts is that the content of the pesticidal substances in plants can vary very much. This makes it difficult to find the best dosage and concentration for application. If you do not see a sufficient effect, it does not mean that pests are resistant, it could just be that the concentration of the solution was too weak.

Boiling or not?

Should we boil the extracts or they should just be fermented in water?

There is no need of boiling. Boiling could even reduce the impact of the extracts.

Sacks or not?

Why should I put all the animal waste in a gunia sack instead of direct pouring during the process of liquid fertilizer preparation?

If you put the material into a sack, you will not have to strain the liquid when it is ready for application, and the preparation will not clog your equipment.

See page 5!

Separate chicken from other birds

I have seen people keeping all birds together such as chicken, turkeys, ducks, and geese. Is this an advisable way of keeping birds?

It is not recommended. All these birds have different requirements. Ducks and geese need a clean pool to swim, but chicken and turkeys should not be kept in a humid or muddy environment. If you have a large place where you can satisfy the needs of all these birds, fine. But in a small and overcrowded confinement, they will certainly not do well.

Prevention is better than cure

When should I give organic remedies to my birds: when they are sick, or as a prevention even when they are not sick?

Aloe vera and other plant extracts can prevent infections. Add them to the drinking water regularly.

Effective Micro-organisms (E.M.) helps build up immunity and vitality of the birds and is especially good for young chicks. Add a cupful of it to 5 litres of drinking water every day.

Vinegar can help control bloody stool. Use half a cup of vinegar for 5 litres of water.

Rules for disease prevention

The general rule that prevention is much better than cure, are valid especially for poultry farmers. Some times we see chicken houses in terrible condition that one wonders if the chicken will survive. Here are some tips for prevention of chickens diseases:

- Vaccinate the chicken as recommended by the vet
- Give access to the right feed and clean water, in particular for small chicks
- Build shelters against wind and rain and predators
- Clean houses regularly and apply lime wash/disinfect the floor and walls
- Provide dry litter regularly where applicable
- Do not put too many birds together
- Separate chicks from adult birds except from the mother hen
- Vaccinate chicks against the most important diseases and revaccinate if necessary
- Isolate and treat sick birds. If medication is not available then kill the sick birds, burn or bury them. (*Source: infonet-biovision*)

Push-pull changes farming in Central Kenya

A simple method for stemborer control has helped increase crop yields and encouraged farmers to go organic.

The Organic Farmer

Anne Wairimu Kimani, a mother of 5 and member of 3G Farmers Group in Kigio village in Gatanga, Thika, used to harvest only 1 bag of maize from a hired ¼-acre plot in her neighbourhood. But the 1 bag of maize she harvested would barely meet her family's food requirements. Two years ago, she started attending training sessions on sustainable agriculture introduced by KARI Biovision Push-pull Project where she learnt the preparation and use of compost and plant extracts for soil improvement and pest control.

"After using compost, certfied seed and foliar feeds, I have noticed a sudden increase in the maize yield. Last year, I managed to get 8 bags of maize, some of which I have already sold. I intend to use the remaining few bags for home consumption".

Pest control method effective

Simon Ndungu, a member of the group, says the Push-Pull project has enlightened farmers in the group on new methods for control of pests and improvement of soil fertility. "We knew tithonia plant, but we never knew that it had many uses. Now we use it together with other plants to make foliar feeds that we apply as fertilizer," he says (see pages 5 & 6)

From a small-demo plot provided by a group member, the farmers get practical tips on how the push-pull method works to control the stemborer; desmodium, a legume is planted between rows of maize. The stemborer which damages maize, does not like desmodium; it therefore moves to the Napier grass which is planted around the maize field (push effect). When the eggs hatch and the larvae go into the Napier grass stems, they cannot leave to attack the maize because Napier grass produces a sticky, glue-like substance which traps and kills them, reducing maize destruction (pull effect).

Increase in maize yield

The added benefit of using the Push-Pull method for the farmer is that the desmodium is a rich source of proteins for the animals and also helps fix nitrogen into the soil. Desmodium is mixed with Napier grass and other fodder given to the animals. The maize yield increases because damage by the stemborer is reduced.

The Push-Pull project uses the Farmer Field Schools (FFS) approach to introduce various technologies to small-scale farmers in the project area. So far, a total of 71 FFS groups have been trained on Push-Pull method and other technologies that have not only helped them to improve their crop and milk yields. More than 25,000 farmers in the project area have benefited directly or indirectly from the various technologies they have learnt through the project.

Harvesting desmodium in a Push-Pull demonstration plot in Kigio, Gatanga District.

Stemborer reduced

Research conducted in various regions in the project area show that stemborer infestation has been reduced from a high incidence of 35 per cent to 13 per cent. As a result of stemborer control, maize yield has also increased from an average of 1 tonne per hectare to 2.9 tonnes per hectare.

The number of farmers using the Push-Pull method is increasing every year. They have started desmodium nurseries, the seedlings are sold to other farmers. They can now produce more fodder, which they conserve for future use.

Value addition increases income

They have also learnt how to add value to some of their farm products, for example instead of selling raw milk, the project has taught them how to prepare yoghurt, which has a ready market and fetches a higher price. Training on use of farmyard manure for use in small-scale biogas units has been introduced to selected farmers in the project area. The slurry from the biogas units is applied on maize and Napier grass instead of chemical fertilizer.

To close the knowledge gap and supplement the information they get from training, each of the FFS is supplied with monthly copies of The Organic Farmer magazine. The farmers are being encouraged to form cooperative societies in order to market their produce together and acquire credit in order to diversify their activities and engage in competitive agricultural enterprises that can increase their earnings.

farmers forum

020 445 03 98 0717 551 129 0738 390 715

Dairy cows for sale: Lelgut Dairy Farm has cows for sale. Get in touch with us via lelgutdairyfarm@yahoo.com

Rabbits wanted: I want rabbits and training on rabbit keeping. evidzas@gmail.com

Broilers for sale: We have ready broilers weighing 1.2 kgs @ 370 contact Christine for your orders. Christine Wambugu 0722 574 122

Tomatoes for sale: I have greenhouse tomatoes for sale. Anthony Ngure 0731 202 646

Broilers wanted: We can buy broilers and ex-layers straight from your farm. Large numbers wanted. Kelvin Gitonga 0725 016 684

Stevia outgrowers wanted: We are looking for out growers stevia minimum one acre. Oliver Ndegwa email: agrotunnel@gmail.com

Kenbro chicks for sale: I have 4 week-old healthy and well-vaccinated Kenbro Edward A. Malaba – 0711 200 345

Ornamental fish wanted: Bigfish Aquariums based in Westlands, Nairobi is looking for suppliers of exotic ornamental fish. Email:bigfishaquaiums@gmail.com or call Alex on Samuel Thuo Mungai Tel 0720 785 400.

Kenbro chicks for sale: We have Kenbro chicks for sale day-old and 8 weeks. Contact Alysaly Poultry International Alphonce Otieno Opinya: 0723 619 238 or visit http://alysalypoultry.kbo.co.ke/

Rabbits: I am looking for fellow rabbit farmers in Mombasa. Contact Jr Rayray 0713 548 399

Kenbro Chicks for sale: We are selling 4 week-old Kenbro chicks at Ksh 300 fully vaccinated in Lanet, Nakuru. For inquiries please call 0716 603 121.

Organic citrus fruits: We have organic citrus fruits. Contact Puri Castillo: organicfresh.lemon@gmail.com.

Peking ducks for sale: We have Peking ducks available for sale. Fast breeders. Contact Dasco Enterprises 0719 808 222.

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